ASRC
AMERICAN SYNTHETIC RUBBER COMPANY

December 10, 2004

Mr. Arthur L. Williams, Director
Louisville Metro Air Pollution Control District
850 Barrett Avenue
Louisville, KY 40204-1745

Re: Informal Comments on the Proposed STAR Program

Dear Mr. Williams:

American Synthetic Rubber Company (ASRC) supports the development of a program to address air toxics emissions in Louisville that is reasonable and necessary to protect public health. ASRC has already made commitments to the Air Pollution Control District and Board to implement several different actions which will significantly reduce its emissions, including the installation of a new primary control device that will be used to reduce 1,3-butadiene emissions. The implementation of those commitments will involve expenditures in excess of three million dollars ($3,000,000.00). In addition, as it has been for many years and as demonstrated by its ISO 14001 certification, ASRC remains committed to continuous improvement in its environmental performance. For example, ASRC is the facility upon which the Maximum Available Control Technology (MACT) standard for synthetic rubber producers is based. ASRC is continuing to review its processes and practices to attempt to identify additional actions that could feasibly be implemented to further reduce emissions of air contaminants.

Since the STAR Program was first made available for informal comment, ASRC has undertaken a detailed review and evaluation of the proposed STAR Program and researched EPA guidance and other information related to the regulation and modeling of air toxics. ASRC has spent many hours trying to understand how the STAR Program will apply to our operations and what will be necessary to achieve compliance with the goals and requirements of the STAR Program, including the performance of preliminary modeling exercises. ASRC still has significant areas of uncertainty as to how the STAR Program will apply and what the costs of compliance will be.

Because the STAR Program is complex and differs significantly from other local air toxics programs that have been implemented around the country, ASRC appreciates the opportunity to submit informal comments on the STAR Program. ASRC submits the following informal comments to identify those aspects of the STAR Program that should receive consideration at this time, when the District is drafting revisions to the Program in response to the informal comments that have been submitted thus far. Because these are informal comments, ASRC is addressing only the most significant aspects of the STAR Program that we believe should receive further consideration to be certain that the Program is technically sound and scientifically appropriate. These comments are not intended to be comprehensive. ASRC has also attempted not to repeat the informal comments that have been submitted by others and believes that all of the informal comments that have been submitted should receive careful and thorough consideration by the District.

I. The proposed STAR Program elevates screening level assessments to quantified risks of exposure.

To its credit, it appears that the District has attempted to develop a proposed regulatory program that uses screening models that are readily available from U.S. EPA to determine the maximum ambient concentration of Toxic Air Contaminants (TACs) in an effort to conserve both industry and agency resources. ASRC agrees with the use of

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risk assessment as a method to regulate air toxics. However, ASRC does not agree that the methodology to implement risk assessment in the STAR Program as currently proposed is technically sound. ASRC is concerned that the use of the designated screening models, which were designed by U.S. EPA to "provide conservative estimates of the maximum ambient concentration,"[1] will significantly overestimate the actual risk posed to a resident living near a source. Such overestimation will result in expensive actions to reduce the amount air toxics emitted by stationary sources, with no corresponding increase in the protection of public health.

For the following reasons, ASRC recommends that the District re-evaluate the use of the screening level models in the proposed STAR Program to estimate exposures to residents living near stationary sources and estimate exposures at a receptor point where a 70-year continuous exposure might reasonably occur.

A. The use of ambient air concentrations to extrapolate an exposure risk as the basis for regulatory compliance is inappropriate.

The proposed regulations are based on risks estimated from ambient air models rather than from exposure models. Ambient air concentrations may be used as a surrogate for the inhalation exposure concentrations for a population for screening-level evaluations.[2] Such screening level assessments, which use simple models and result in conservative assumptions to estimate ambient air concentrations, assume continuous inhalation of outdoor air at the modeled location.[3] Screening level assessments, which are typically used to prioritize further assessments, including whether a regulatory program should be developed, are appropriate for identifying potential risks. As a first step in determining whether a problem exists, screening level assessments are more uncertain than risk assessments using more refined exposure modeling.[4]

Evaluating a surrogate for inhalation is appropriate for deciding that regulatory action is necessary because it estimates potential problems. However, it is not appropriate for determining regulatory compliance with a standard because it does not determine actual exposure risks, but grossly estimates them. In other words, screening level assessments may be too broad to be used to evaluate exposure risk from a stationary source without refinement through the use of a more sophisticated exposure model. Extrapolating a screening level risk, which estimates a potential problem, to a quantified exposure risk is not technically appropriate.

B. Benchmark ambient concentrations ("BAC") will establish a threshold risk level less than one-in-a-million.

One way in which the District should re-evaluate the use of screening level models is by changing the assumptions used in developing the BACs, which are used to determine maximum ambient concentrations. BACs evaluate the worst case scenario and contemplate that a source emits the maximum possible TAC concentration for 70-years/365-days/24-hours without variation. Because the processes used to develop BACs for use in the proposed STAR Program contain such conservative built-in safety assumptions, the risk of emissions from a stationary source will necessarily be overestimated.

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[1] *See* EPA Region 4 Comments on the Louisville Metro Strategic Toxic Air Reduction Draft Regulations, p. 8, Section 4.1.
[2] Air Toxics Risk Assessment Reference Library, Volume 1, Technical Resource Manual, p. 11-2.
[3] *Id.*
[4] *See, generally,* Air Toxics Risk Assessment Reference Library, Volume 1, Technical Resource Manual, Chapter 13.3.4.

C. It is inappropriate to apply a 70-year continuous exposure assumption of one-in-a-million to exposure points where such a continuous exposure could not occur.

Another way in which the District should re-evaluate the use of screening level models is by changing the exposure point at which risk is estimated. The proposed STAR Program establishes a goal of one-in-a-million for each carcinogenic TAC emitted into ambient air at a stationary source. "Ambient air" is defined in the proposed Regulation 1.02, Section 1.6 as "that portion of the atmosphere, external to buildings, to which the general public has access. For the purpose of determining the concentration of an air contaminant that is or may be emitted by a stationary source, ambient air also includes the atmosphere, external to buildings, that is beyond the property line of that stationary source." As interpreted by the District, stationary sources must determine whether their facilities meet the goal of one-in-a-million at the point of maximum exposure concentration – the source's fence line. As noted by U.S. EPA, the point of maximum exposure, also known as the "Maximum Exposed Individual" ("MEI"), is generally used in screening level assessments because it provides a conservative, "high-end" estimate of exposure concentrations.[5]

This means that stationary sources may be required to determine compliance at locations in their parking lots, if those parking lots are not fenced, or on neighboring industrial properties or roadways --- all places where people do not reside and where no one will be exposed for the 70-years/365-days/24-hours contemplated under the modeled exposure rationale currently used in the proposed STAR Program.

Requiring stationary sources to reduce exposures at a location where a person could not receive the 70-years/365-days/24-hours exposure means that the exposure risk at location where a person could receive such an exposure will be less than one-in-a-million. Such a reduction is an unnecessary burden that will result in no appreciable increase in protection for public health, especially given that the proposed STAR Program currently exempts area sources that are generally co-located with residences, such as gas stations, dry cleaners and others, and which may pose as a great or greater a risk of exposure to residents where they actually live as emissions from stationary sources.

Because the BACs as currently proposed assess the worst case exposure scenario and are inherently conservative, the receptor point should be moved from the fence line to a point where a 70-year continuous exposure might reasonably occur. Recognizing that residential exposures do not typically occur on the fence line of an industrial source, U.S. EPA has employed various exposure endpoints in assessing risk from industrial sources and typically begins its exposure assessments by evaluating the census block internal points or census tract internal points.[6]

D. Other states and U.S. EPA recognize the appropriateness of estimating risk based on actual exposures.

Michigan's program, for example, takes this principle into account. Under Michigan's program, if a source cannot demonstrate on an individual TAC by TAC basis that its new or modified unit will not meet the Initial Risk Screening Level (IRSL), i.e., a risk of one-in-a-million,[7] the source can demonstrate compliance by showing that the emissions from the new unit and all other existing units at the source do not exceed the Secondary Risk Screening Level ("SRSL), i.e., a risk of one-in-a-hundred thousand on a TAC by TAC

[5] Air Toxics Risk Assessment Reference Library, Volume 1, Technical Resource Manual, p. 11-3.
[6] Air Toxics Risk Assessment Reference Library, Volume 1, Technical Resource Manual, pp. 11-3 – 11-5.
[7] Mich. Admin. Code R 336.1109(d), Definition for IRSL. Calculated as $\frac{1x10^{-6}}{URE}$ per Mich. Admin. Code R 336.1231

basis.[8] Industrial sources that impact other industrial properties and/or roadways are allowed to emit up to ten times the IRSL for a specific unit or the SRSL for all new and existing units on the basis that industrial exposures are shorter in duration than residential exposures.

Under Michigan's risk standards, industrial workers are exposed to a risk of ten-in-a-million, a standard that appears to allow a higher exposure concentration for industrial workers. That appearance, however, is misleading. The industrial worker and the residents' exposures are actually about equal because Michigan recognizes that workers and other transients (i.e., actual receptors) are in the area so much less time than residents. As a result, the higher overall exposure concentrations on industrial properties and roadways are still equivalent to an overall exposure of less than one-in-a-million.

Michigan retains the authority to establish on a case-by-case basis a lower maximum emission rate than that referenced above if it determines that the prior emission rate is not protective of human health or the environment.[9]

In using risk estimates for decision-making, U.S. EPA has stated that it applies the principle in the following manner:

> In protecting public health with an ample margin of safety, EPA strives to provide maximum feasible protection against risks to health from HAPs by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than $1x10^{-6}$ (one-in-a-million) and (2) limiting to no higher than approximately $1x10^{-4}$ (one-in-ten thousand) the estimated risk that a person living near a source would have if exposed to the maximum pollutant concentrations for 70 years.[10]

In accordance with this principle, U.S. EPA has determined that "a maximum individual risk of approximately one hundred-in-a-million should ordinarily be the upper end of the range of acceptable risks associated with an individual source of pollution" because the maximum individual risk '"does not necessarily reflect the true risk, but displays a conservative risk level which is an upper bound that is unlikely to be exceeded"'[11]

II. Based upon currently available information, there is no demonstrated health risk that warrants regulation of more than the Category 1 TACs.

ASRC recommends that the District reconsider the manner in which Category 1A, 2 and 3 TACs are regulated under the STAR Program.

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[8] Mich. Admin. Code R 336.1119(c), Definition for SRSL. Calculated as $\frac{1x10^{-6}}{URE}$ per Mich. Admin. Code R 336.1231

[9] Mich. Admin. Code. R336.1228.

[10] Air Toxics Risk Assessment Reference Library, pp. 27-5,6 (citing the preamble to the benzene NESHAP rulemaking, 54 Federal Register 38044, September 14, 1989).

[11] 69 Federal Register 48338, 48348, August 9, 2004 (Proposed NESHAP for Coke Oven Batteries Rule).

As initially envisioned in the Risk Management Plan for the West Louisville Air Toxics Study (WLAT Study), chemicals of concern and their sources were to be identified. As a result, 18 chemicals of concern were identified as part of the WLAT Study. In addition to the 18 chemicals of concern identified in the WLAT Study, which are regulated as Category 1 Toxic Air Contaminants ("TACs"), the District added 20 additional TACs as Category 1A on the basis of EPA's September 27, 2002 Relative Risk Screening Analysis. EPA's Relative Risk Screening Analysis, notes the following:

A. The Relative Risk Screening Analysis is a "20,000 foot view" of potential impacts of toxic air pollution in the Southeast.[12]

B. The Relative Risk Screening Analysis does not "imply any cause-effect relationship between an actual case of disease or death and potential exposure."[13]

C. The Relative Risk Screening Analysis is based on RSEI data for TRI emissions from 1999 and NATA data from 1996.[14]

Because the Relative Risk Screening Analysis was not intended as a source of regulatory decision-making, it does not justify regulating Category 1A TACs in the same manner as Category 1 TACs. None of the 20 additional chemicals were identified above a regulatory level of concern in the WLAT Study. Moreover, the data used by EPA at the time it analyzed relative risk in the southeast does not take into account industry emission reductions or changes in mobile emissions that have occurred in the last eight years. For example, between 1999 and 2002, industry in Jefferson County reduced emissions to the air by over four million pounds.[15] Because there is no demonstrated health risk nor, as yet, identified health benefit to controlling Category 1A TACs in the same manner as Category 1 TACs, companies in Louisville Metro will immediately be subjected to higher maintenance and operating costs and capital expenditures to control air emissions which have not been identified as a problem.

In addition to the 38 TACs discussed above, a source must demonstrate compliance with another 153 TACs, Categories 2 and 3, collectively, for new or modified processes or process equipment. Just as with the Category 1A contaminants, there has been no demonstrated health threat or benefit that justifies including the Category 2 or 3 TACs in the full STAR Program. Asking industry to control for emissions which might someday become a problem is a serious economic and competitive burden. Consider, as an example, whether the District would be comfortable bringing an enforcement action to compel a source to install costly control equipment on the basis of a potential problem.

Tracking Category 1A, 2 and 3 TACs under Regulation 1.06, Stationary Source Self Monitoring, Emissions Inventory Development, and Reporting, and analyzing the data to determine if and when the 153 additional TACs are actually a problem that requires regulatory control is an alternative that the District should consider. Should the District determine later that a TAC is a problem, the TAC should be added through the District's rulemaking procedures to the list of Category 1 TACs and subjected at that time to the full STAR Program.

III. Fugitive emissions are not accurately estimated by EPA's SCREEN and ISC models.

ASRC recommends that the District adopt an adjustment factor for fugitive emissions for use with the Tier 3 and Tier 4 models proposed by the District EPA's SCREEN and Industrial Source Complex ("ISC") models, Tier 3 and Tier 4 under the proposed STAR Program, significantly overestimate concentration predictions from fugitive emissions. As noted by the Texas Natural Resource and Conservation Commission ("TNRCC"), such overestimation may

[12] Relative Risk Screening Analysis, p.1.
[13] Relative Risk Screening Analysis, p. 1.
[14] Relative Risk Screening Analysis, pp. 4,5.
[15] See EPA TRI Explorer Database.

"require costly control strategies to meet air quality objectives with no real improvement in actual air quality."[16] As a consequence, Texas has mitigated the impact of the model overestimation through the application of an adjustment factor for use with EPA's SCREEN and Industrial Source Complex ("ISC") models.[17]

TNRCC's adjustment factor models fugitive emissions near the ground at 60% of their emission rate to address issues related to low-level fugitive emissions raised during its standard exemption protectiveness review project and by U.S. EPA during its development of the models.[18] Some of the concerns raised by TNRCC as the basis for its adjustment factor include:

1. Emissions from fugitive sources cannot be readily quantified. TNRCC March 6, 2002 Memo, p. 2.

2. EPA has adopted practices and procedures that cause the SCREEN and ISC models to predict high concentrations for low-level fugitive releases. TNRCC March 6, 2002 Memo, p. 4.

3. Because it is difficult to match meteorological conditions to batch or sporadic operations since exact run times may not be known, the models over-predict low-level emissions associated with these operations. TNRCC March 6, 2002 Memo, p. 2.

4. Stability and light wind assumptions in the models seriously overestimate short-term concentrations from low-level sources. TNRCC March 6, 2002 Memo, pp. 4,5.

5. Slight errors in estimating wind direction may result in large errors in predicted concentrations at specific locations when pollutant plumes are narrow and winds are assumed to be stable. TNRCC March 6, 2002 Memo, p. 5.

6. Sampling times for vertical dispersion, i.e., stack emissions, may not accurately predict horizontal dispersion. TNRCC March 6, 2002 Memo, p. 5.

7. The models assume that wind speed near the ground is the same as at 10m, which may cause the model to overestimate concentrations. TNRCC March 6, 2002 Memo, p. 6.

In selecting the 60% adjustment factor to more accurately estimate low-level fugitive emissions, TNRCC stressed that the new procedure is as conservative as the agency's prior practice, which included directly adjusting the model to more accurately predict emissions on a case-by-case basis using engineering judgment, but is significantly less labor intensive and more streamlined.[19] While ASRC recognizes that other models, such as CALPUFF and AERMOD, may more accurately predict fugitive emissions, such models are highly sophisticated and require more intensive resource allocation by industry in running the models and the District in evaluating the results from such models. Because the adjustment factor used by TNRCC will conservatively estimate fugitive emissions, streamline the modeling process and conserve agency resources, the adjustment factor is appropriate for use with the Tier 3 and Tier 4 models proposed by the District.

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[16] TNRCC March 6, 2002 Guidance: *Modeling Adjustment Factor for Fugitive Emissions*, March 6, 2002, p. 1.
[17] *See* TNRCC March 6, 2002 Guidance: *Modeling Adjustment Factor for Fugitive Emissions.*
[18] *Id.*, p. 1.
[19] *Id.* At p. 8.

IV. The process proposed in the STAR Program for summing the cancer risks for all Toxic Air Contaminants ("TACs") is not technically sound.

ASRC recommends that summing of risk be done only for individual TACs, and not all TACs that may be emitted by a source.

Proposed Regulation 5.21 establishes a standard which sums the risk for each TAC and then combines that individual risk with the risk for all other TACs emitted by the source. For an existing stationary source, the standard is 7.5-in-a-million for all carcinogenic TACs emitted, including all process and process equipment and fugitive emissions. For a new or modified source, the standard is 3.8-in-a-million for all carcinogenic TACs emitted, including all process and process equipment and fugitive emissions. For all sources in Louisville Metro collectively, the standard is 10-in-a-million for all carcinogenic TACs combined.

Under Regulation 5.21, Section 2.2.3 and 2.5.3, the environmental acceptability ("EA") for all Toxic Air Contaminants ("TACs") that are determined to be carcinogens is defined "as the sum of the cancer risks from all individual toxic air contaminants from all applicable individual processes or process equipment" as derived from the following equation:

$$EAL_C = \sum_{i=1}^{n} \sum_{j=1}^{m} \frac{Maximum\ concentration_{ij}}{BAC_{C_i}} \qquad [Equation\ 2]$$

Where:
- i = an individual carcinogenic toxic air contaminant, from
- j = an individual process or process equipment,
- n = the total number of carcinogenic toxic air contaminants to be included in the demonstration of environmental acceptability,
- m = the total number of processes or process equipment from which carcinogenic toxic air contaminant Ai@ may be emitted,
- BAC_{Ci} = the benchmark ambient concentration for that carcinogenic toxic air contaminant, as determined pursuant to Regulation 5.20 Section 3, and

Maximum concentration = the highest concentration of a toxic air contaminant in the ambient air, taking into account the applicable averaging time frame for the toxic air contaminant, as determined pursuant to Regulation 5.22.

Equation 5 in Regulation 5.21, Section 2.8, which is used to determine the EA standards for toxic air contaminants applicable to all permitted stationary sources, sums cancer risks for all sources in an identical manner.

Summing the cancer risks based on the maximum ambient concentrations of TACs derived from Regulation 5.22, Sections 4 – SCREEN3 and TSCREEN Models, and Section 5- ISC3 or other EPA-approved air quality model in 50 CFR Part 51 Appendix W, is inappropriate for two reasons.

A. The proposed regulations arbitrarily evaluate risks between sources with processes or process equipment that meet the goal of 1 in a million for each TAC and those sources where one or more process or process equipment exceed the goal of $1x10^{-6}$.

In particular, Regulation 5.21, Section 2.2.1 and 2.5.1 do not require sources to sum the cancer risks from all process and process equipment for all TACs to determine whether the goal is met. If the risk for each individual TAC from all process and process equipment at the source meets the goal 1 in a million, no further evaluation of the total risk from the source for that TAC should be necessary. As an example, if a source has 9 different processes emitting 9 different TACs that each meet a risk of 0.84 in a million, the total risk from the source is presumed to be less than 1 in a million, even though the summed risk would exceed the standard of 7.5 in a million. However, if a source has 7 processes

emitting 7 different TACs that each meet a risk of less than 1 in a million, but has an 8th process for which the TAC risk is greater than 1 in a million, an evaluation must be performed pursuant to Section 2.5.3 and the risks from all 8 processes must be summed for all TACs. For example, if the 7 processes each had a risk of 0.99 in a million, but the eighth process had a risk of 1.58 in a million, the summed risk would exceed 7.5 in a million. Even if the facility could make a T-BAT demonstration for the eighth process, the facility would exceed the allowed risk standard and the process could only continue in operation if the Board granted a variance. The proposed regulation treats two sources that may pose the same risk differently by requiring one facility to sum all of its TACs together. For this reason, and as explained below, each TAC should be summed individually and compared to the goal on an individual basis.

B. The proposed summation of different TACs is inappropriate because modeling concentrations across space and time prevents their summation.

According to EPA, "modeling the movement of mixtures across space and time present technical difficulties given the likelihood that individual components will behave differently in the environment (i.e., fate and transport)."[20] Tier 3 and Tier 4 models estimate the theoretical maximum ambient concentration for a process or process equipment for each TAC, each of which will vary temporally and spatially from the maximum ambient concentration for other processes or process equipment. The STAR Program will require the summing of exposures that do not occur at the same exposure point.

The District has explained that it added the summation requirements to be consistent with the Brownfields Program, which evaluates risk based on actual data, not theoretical models.[21] Additivity under the Brownfields Program is used to determine if action is required and, if so, which constituents of concern are the risk drivers that require action. Because contamination evaluated under the Brownfields Program is static, its impact on a receptor at a given point in time and at a specific place may be evaluated because all exposures occur at the same point. Additivity in that circumstance may be appropriate. Ambient air concentrations, as modeled in Tier 3 and Tier 4, are dynamic because the occurrence of maximum concentrations of TACs vary in time and space. For that reason, it is inappropriate to sum such independent impacts together. Summation of TACs may be appropriate if the risk is summed at the same location, such as the centroid of the census tract.

In any event, summation is inappropriate unless the TACs being summed have known synergistic effects. The purpose of summing is to account for the increased risk that may be posed by multiple TACs that individually do not exceed the applicable BAC, but may pose a greater risk in combination due to synergistic effects. If there is no synergistic effect from exposure to the multiple TACs, summing will further overestimate the risk.

V. The process in the proposed STAR Program for evaluating risks that exceed one in a million provides no guidance to the District or the Board in evaluating potential risks.

ASRC recommends that the District provide criteria to be used in summing risks.

The 3.8, 7.5 and 10 in a million standards established in the proposed STAR Regulation are extremely stringent in relation to limits established by U.S. EPA and other state programs. See, for example, U.S. EPA's determination that "a maximum individual risk of approximately 100-in-a-million should ordinarily be the upper end of the range of acceptable risks associated with an individual source of pollution" because the maximum individual risk '"does not

[20] EPA Risk Assessment Guidance (RAGs), Part A: Chapter 8, p. 8-12.
[21] See p. 23 of the Cabinet's VERP Guidance Document for their equation.

necessarily reflect the true risk, but displays a conservative risk level which is an upper bound that is unlikely to be exceeded,"[22] and Michigan's program, which is discussed in Section I, D. 1 above. As a general matter, cancer risks exceeding 1-in-a-million or hazard quotients greater than 1.0 are not regulatory levels used by U.S. EPA.[23] They are typically referenced as a way of "judging the relative importance of different pollutants with regard to their potential to cause adverse health effects."[24] Along that same line, a hazard quotient greater than one does not necessarily suggest a likelihood of adverse effects. As noted by U.S. EPA:

> a hazard quotient less than one, however, suggests that exposures are likely to be without an appreciable risk of noncancer effects during a lifetime. Furthermore, the hazard quotient cannot be translated into a probability that an adverse effect will occur, and is not likely to be proportional to risk. A hazard quotient greater than one can be best described as only indicating that a potential may exist for adverse health effects.[25]

Consequently, determining what is an acceptable or unacceptable risk depends on a variety of factors, including more refined information.[26]

There are no criteria in the proposed STAR Program that guide the District in summing the cancer risks for all sources, see, for example, Regulation 5.21, Section 2.8, or for allowing a source to exceed the applicable standard, see, for example, Regulation 5.21, Sections 2.3 and 2.6. Because there are no criteria to guide the District's decisions, the application of these regulations is highly uncertain and does not allow the regulated community to determine how the regulations will be applied.

VI. The proposed definition of "ambient air" is overly broad and will create regulatory inconsistency.

ASRC recommends that the definition of "ambient air" be consistent with the federal and state definition.

The definitions used in the STAR Program should be consistent with federal and state law. Using consistent definitions will prevent confusion and regulatory uncertainty, and avoid regulatory disparity between sources in Louisville Metro and those outside of Louisville Metro.

The STAR Program incorporates federal guidance into the definition of "ambient air" in Regulation 1.02 Section 1.6 by adding the last sentence, which states that "ambient air also includes the atmosphere, external to buildings, that is beyond the property line of that stationary source." This definition of "ambient air" differs from that used by USEPA and the Kentucky Division for Air Quality. In order to avoid regulatory preference for sources outside of Louisville Metro, the definition should be consistent with the federal and state definition.

VII. Monitoring required under proposed Regulation 1.21, Section 3 should be by the applicable referencing subpart rather than solely by 40 CFR 63 Subpart H, National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks.

ASRC recommends that the Leak Detection and Repair provisions of the STAR Program be consistent with federal regulations.

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[22] 69 Federal Register 48338, 48348, August 9, 2004 (Proposed NESHAP for Coke Oven Batteries Rule).
[23] www.epa.gov/ttn/atw/nata/risksum.html
[24] *Id.*
[25] *Id.*
[26] 69 Federal Register 48338, 48348, August 9, 2004 (Proposed NESHAP for Coke Oven Batteries Rule)

ASRC is subject to the federal MACT Leak Detection and Repair ("LDAR") standards to control leaks from equipment. Because the MACT program is effective, safe and already in use, ASRC recommends that the proposed STAR Program incorporate the federal MACT standards by reference in order to provide consistency with the federal regulations. Absent that, companies will have to implement and track two separate leak detection and repair programs, each with separate recordkeeping, reporting and inspection requirements.

At a minimum, proposed Regulation 1.21, Section 3 should be revised as follows:

> The owner or operator of an affected facility shall monitor the process unit equipment for leaks of the regulated organic hazardous air pollutant according to the referencing subpart, except that the following additional requirements shall apply ... .

Section 2 of proposed Regulation 1.21 should also be revised to include references to the applicable referencing subpart.

In addition, the definition of "leak" in Section 1.4 should establish different screening concentrations for "light liquids" and "heavy liquids" because of the differing vapor pressures.

The definition should also establish different screening concentrations depending on the type of component that is monitored. In addition to the components listed in the definition, different screening concentrations should be established for connectors, pressure relief devices and instrumentation systems. The definition should also recognize and distinguish the different types of pumps that are used by different industries, including food/medical service, and establish different screening concentrations based upon the type of pump.

VIII. The manner in which chromium is addressed in the STAR Program should be clarified.

ASRC recommends that the STAR Program be revised to provide a means to speciate total chromium into hexavalent and trivalent chromium.

Chromium is a metallic element that naturally occurs in the environment in two major valence states: trivalent chromium (often referred to as chromium III) and hexavalent chromium (often referred to as chromium VI).[27] For that reason, chromium may be speciated and identified as trivalent chromium, which is an essential element in humans with a daily intake of 50 to 200 micrograms per day recommended for an adult, or hexavalent chromium, a much more toxic form than trivalent chromium and which has been identified as a known human carcinogen.[28] Sources that may emit chromium in Louisville Metro include paint and chemical manufacturing operations, chromium plating, steel production and processing operations, cement production, cooling towers, and coal and oil combustion.[29]

A. Chromium should not be listed as a Category 1 TAC.

It is our understanding that the District has included "chromium and chromium compounds" in the list of Category 1 TACs based on the WLAT Study.[30] The monitoring that was done for chromium as part of the WLAT Study was for total chromium. However, for purposes of the risk analysis, all

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[27] *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress, Volume 2, Appendix E-8.*

[28] *Id. To* date, EPA has not calculated a cancer risk estimate for inhalation or oral exposure to trivalent chromium. *Id.*

[29] *Locating and Estimating Air Emissions From Sources of Chromium,* EPA-450/4-84-007g, July 1984, Section 4, pp. 29 – 208.

[30] Proposed Regulation 5.23, Section 1.

of the chromium was assumed in the WLAT Study to be hexavalent chromium.[31] Because the WLAT Study assumes that all the total chromium measured at the monitors is hexavalent, it overestimates the toxicity of the chromium present in the ambient air. Consequently, because the WLAT Study did not speciate chromium as trivalent or hexavalent, there has been no demonstration that either trivalent chromium or hexavalent chromium is actually a health risk. For that reason, hexavalent and trivalent chromium should not be included as a Category 1 TAC in the STAR Program, but should be included on either the list of Category 2 or 3 TACs.

B. The proposed STAR Regulations do not provide a basis upon which chromium may be speciated.

The proposed STAR regulations do not clearly indicate the form – total, hexavalent or trivalent – in which chromium is to be evaluated for environmental acceptability nor do the proposed regulations establish a method or guidance by which chromium may be speciated.

1. The proposed regulations do not clearly identify the form of chromium to be evaluated.

Chromium is listed as a Category 1 TAC in the proposed Regulation 5.23 Section 1.2 by reference to the Chemical Abstract Service ("CAS") No. 7440-47-3 & various. CAS No.7440-47-3 is the registry number for elemental chromium, i.e., total chromium. EPA's IRIS Database, which provides unit risk estimates for cancer causing chemicals and inhalation references for non-cancer causing chemicals for use in calculating Benchmark Ambient Concentrations per proposed Regulation 5.20, only includes risk information for trivalent chromium, CAS No. 16065-83-1, and hexavalent chromium, CAS No. 18540-29-9. Because the list of Category 1 TACs proposed by the District specifically references the CAS number for total chromium, it is not clear what form of chromium is required to be evaluated for environmental acceptability under the proposed regulations.

It appears it is the District's intent to evaluate chromium under the STAR Program as either trivalent or hexavalent chromium. The District recently posted a list of Benchmark Ambient Concentrations ("BACs"), which provides the BACs for "chromium $^{\text{hexavalent}}$ & chromium compounds, CAS No. 7440-43-9" and "chromium $^{\text{trivalent}}$ & chromium compounds, CAS No. 16065-83-1" on its website.[32] This appears to indicate that a source may speciate its emitted chromium and evaluate the risks from trivalent chromium and hexavalent chromium separately. Whether chromium is to be evaluated as either trivalent or hexavalent chromium, or is to be evaluated as total chromium, with the assumption that all of the total is hexavalent chromium, should be clarified in the STAR Program.

2. The STAR Program should provide a regulatory method or guidance by which chromium may be speciated.

The proposed STAR regulations do not provide clear direction by which a source may speciate its emitted chromium as either trivalent and hexavalent chromium. Absent a regulatory method or guidance by which chromium may be speciated, it appears that the STAR Program requires a

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[31] *See WLAT Study, Table 4-1, Cancer Toxicity Values for COPCs, which references "Chromium (as VI) and Table 4-2 Non-cancer Toxicity Values for COPCs, referencing same.*

[32] The CAS No. listed for chromium hexavalent & compounds is for cadmium and cadmium compounds although the actual BAC appears to be based on the unit risk estimate for CAS No. 18540-29-9. For the purposes of this comment, the reference to the CAS No. for cadmium is assumed to be a clerical/typographical error.

source to assume that its total chromium emissions consist of all hexavalent chromium, which is the assumption that was applied in the WLATS.

Chromium is a trace element common in most coals and oils in minor amounts. The amount of chromium emitted to the atmosphere during coal combustion depends on various factors, including (1) the chromium content of the coal burned; (2) the type of boiler used and its firing configuration; (3) the portioning of chromium between fly ash and bottom ash; and (4) the chromium removal efficiency of any controls present on the unit.[33]

ASRC has researched hexavalent and trivalent chromium emissions from coal combustion in an attempt to identify a basis to speciate the chromium. Based on its research, ASRC has determined the following:

1. AP-42, Table 1.1-18 includes a hexavalent chromium factor of 7.95×10^{-5} lbs/ton of coal burned (controlled). Using the AP-42 chromium factor, hexavalent chromium would account for 30.38% of the total chromium emitted from coal combustion. The 7.95×10^{-5} factor, however, has a rating of "D", i.e., below average, on the basis that "the factor is developed from A, B and/or C-rated test data from a small number of facilities, and there may be reason to suspect that these facilities do not represent a random sample of the industry. There also may be evidence of variability within the source population."[34]

2. EPA in its 1998 *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress*, assumed that 11% of the total chromium emitted from for coal-fired utilities is the more toxic hexavalent form.[35] EPA based its assumption that 11% of total chromium emitted from coal-fired boilers was hexavalent chromium on an analysis of the average annual emissions from a limited number of coal-fired sources with hexavalent chromium emissions ranging from 0.3% to 34%.[36] The AP-42 factor for speciating chromium is consistent with this range.

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ASRC has attempted to evaluate the proposed STAR Program in an environmentally protective manner. We feel very strongly that addressing the foregoing comments and regulations is necessary to achieve a reasonable program for the reduction of emissions of air toxics that will be protective of public health.

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[33] *Locating and Estimating Air Emissions From Sources of Chromium,* EPA-450/4-84-007g, July 1984, Section 4, p147.

[34] AP-42, Volume 1, Fifth Ed. – January 1995, p. 10.

[35] *See Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress,* Volume 1, Table 6-1: Summary of High-End Risk Estimates from Chronic Inhalation Exposure by HAP for 424 U.S. Coal-Fired Utilities, p. 6-3.

[36] *See Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress,* Volume 1, Table 6-1: Summary of High-End Risk Estimates from Chronic Inhalation Exposure by HAP for 424 U.S. Coal-Fired Utilities, p. 6-4 (citing limited speciation data described in Appendix H of the EPA Interim Final Utility Report, Volume III).

If you have any questions concerning these comments, please do not hesitate to contact me. ASRC looks forward to your responses.

Sincerely:

Ronald C. Musgnug
Executive Director of Environmental Stewardship

cc: The Hon. Jerry Abramson, Louisville Metro Mayor
Ms. Joan Riehm, Deputy Mayor
Mr. Bruce Traughber, Secretary, Community Development
Dr. Karen A. Cassidy, Ph.D., Chair, APCD Board Chair
Mr. Lewis H. Hammond, APCD Board Member
Mr. Lee Howard, APCD Board Member
Ms. Barbara Sexton Smith, APCD Board Member
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